

# Wing-Kai Hon

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## Education Background

- Ph.D. (CS)     The University of Hong Kong (2000–2005)  
M.Phil. (CS)   The University of Hong Kong (1997–2000)  
B.Sc. (CS)     The University of Hong Kong (1994–1997) with first class honors

## Experience

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| Associate Professor          | National Tsing Hua University (2011.8–now)   |
| Assistant Professor          | National Tsing Hua University (2006–2011.7)  |
| Visiting Assistant Professor | Purdue University (2004–2006)                |
| Postgraduate Intern          | National University of Singapore (2002–2003) |

## Journal Publications

1. N. G. Basu, S. Majumder, and W. K. Hon. *On Finding the Maximum and Minimum Density Axes-Parallel Regions in  $\mathbb{R}^d$* , **Fundamenta Informaticae**, 152:1–12, 2017.
2. W. K. Hon, T. W. Lam, R. Shah, S. V. Thankachan, H. F. Ting, and Y. Yang. *Dictionary Matching with a Bounded Gap in Pattern or in Text*, **Algorithmica**, accepted.
3. T.-S. Tan, D.-Y. Wu, and W. K. Hon. *Partitions of  $n$  that Avoid Partitions of  $f$ , and an Application to the Tiny-Pan Coin Weighing Problem*, **Discrete Mathematics (DM)**, accepted (8 pages).
4. L. Faria, W. K. Hon, T. Kloks, H. H. Liu, T. M. Wang, and Y. L. Wang. *On Complexities of Minus Domination*, **Discrete Optimization**, volume 22, 6–19, 2016.
5. M. Burcea, W. K. Hon, H. H. Liu, P. W. H. Wong, and D. K. Y. Yau. *Scheduling for Electricity Cost in Smart Grid*, **Journal of Scheduling (JoS)**, volume 19(6), 687–699, 2016.
6. Y. F. Chien, W. K. Hon, R. Shah, S. V. Thankachan, and J. S. Vitter. *Geometric BWT: Compressed Text Indexing via Sparse Suffixes and Range Searching*, **Algorithmica**, volume 71(2), 258–278, 2015.
7. W. K. Hon, T. H. Ku, T. W. Lam, R. Shah, S. L. Tam, S. V. Thankachan, and J. S. Vitter. *Compressed Dictionary Matching Index via Sparsification Technique*, **Algorithmica**, volume 72(2), 515–538, 2015.
8. Y. G. Chen, W. Y. Wen, Y. Shi, W. K. Hon, and S. C. Chang. *Novel Spare TSV Deployment for 3-D ICs Considering Yield and Timing Constraints*, **IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)**, volume 34(4), 577–588, 2015.

9. W. K. Hon, T. Kloks, C. H. Liu, H. H. Liu, S. H. Poon, and Y. L. Wang. *On Maximum Independent Set of Categorical Product and Ultimate Categorical Ratios of Graphs*, **Theoretical Computer Science (TCS)**, volume 588, 81–95, 2015.
10. W. K. Hon, T. Kloks, H. H. Liu, and Y. L. Wang. *Edge-Clique Covers of the Tensor Product*, **Theoretical Computer Science (TCS)**, volume 607, 68–74, 2015.
11. C. Y. Tang, S. M. Yiu, H. Y. Kuo, T. S. Tan, K. H. Liao, C. C. Liu, W. K. Hon, and M. L. Liou. *Application of 16S rRNA Metagenomics to Analyze Bacterial Communities at a Respiratory Care Centre in Taiwan*, **Applied Microbiology and Biotechnology**, volume 99(6), 2871–2881, 2014.
12. E. Lo, N. Cheng, W. W. K. Lin, W. K. Hon, and B. Choi. *MyBenchmark: Generating Databases for Query Workloads*, **The VLDB Journal (VLDBJ)**, volume 23(6), 895–913, 2014.
13. W. K. Hon, R. Shah, S. V. Thankachan, and J. S. Vitter. *Space-Efficient Frameworks for Top-k String Retrieval*, **Journal of the ACM (JACM)**, volume 61(2), Article 9, 2014.
14. W. K. Hon, M. Patil, R. Shah, and S. V. Thankachan. *Compressed Property Suffix Trees*, **Information and Computation (INC)**, volume 232, 10–18, 2013.
15. W. K. Hon, T. H. Ku, R. Shah, S. V. Thankachan, and J. S. Vitter. *Compressed Text Indexing with Wildcards*, **Journal on Discrete Algorithms (JDA)**, volume 19, 23–29, 2013.
16. W. K. Hon, T. H. Ku, R. Shah, S. V. Thankachan, and J. S. Vitter. *Faster Compressed Dictionary Matching*, **Theoretical Computer Science (TCS)**, volume 475, 113–119, 2013.
17. W. K. Hon, R. Shah, S. V. Thankachan, and J. S. Vitter. *On Position Restricted Substring Searching in Succinct Space*, **Journal of Discrete Algorithms (JDA)**, volume 17, 109–114, 2012.
18. C. Ma, T. K. F. Wong, T. W. Lam, W. K. Hon, K. Sadakane, S. M. Yiu. *An Efficient Alignment Algorithm for Searching Simple Pseudoknots over Long Genomic Sequence*, **IEEE Transactions on Computational Biology and Bioinformatics (TCBB)**, volume 9(6), 1629–1638, 2012.
19. M. O. Külekci, W. K. Hon, R. Shah, J. S. Vitter, and B. Xu. *PSI-RA: A Parallel Sparse Index for Read Alignment of Genomes*, **BMC Genomics**, volume 12 (S2), S7, 2011.
20. T. K. F. Wong, K. L. Wan, B. Y. Hsu, B. W. Y. Cheung, W. K. Hon, T. W. Lam, and S. M. Yiu. *RNASAlign: RNA Structural Alignment System*, **Bioinformatics**, volume 27(15), 2151–2152, 2011.
21. C. Y. Chan, H. I. Yu, W. K. Hon, and B. F. Wang. *Faster Query Algorithms for the Text Fingerprinting Problem*, **Information and Computation (INC)**, volume 209(7), 1057–1069, 2011.
22. C. C. Yu, W. K. Hon, and B. F. Wang. *Improved Data Structures for Orthogonal Range Successor Problem*, **Computational Geometry: Theory and Applications (CGTA)**, volume 44(3), 148–159, 2011.

23. W. K. Hon, T. W. Lam, R. Shah, S. L. Tam, and J. S. Vitter. *Cache-Oblivious Index for Approximate String Matching*, **Theoretical Computer Science (TCS)**, volume 412(29), 3579–3588, 2011.
24. W. K. Hon, K. Sadakane, and W. K. Sung. *Succinct Data Structures for Searchable Partial Sums With Optimal Worst-Case Performance*, **Theoretical Computer Science (TCS)**, volume 412(39), 5176–5186, 2011.
25. Y. S. Su, W. K. Hon, C. C. Yang, S. C. Chang, and Y. J. Chang. *Clock Skew Minimization in Multi-Voltage Mode Designs Using Adjustable Delay Buffers*, **IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)**, volume 29(12), 1921–1930, 2010.
26. W. K. Hon, M. Patil, R. Shah, and S. B. Wu. *Efficient Index for Retrieving Top-k Most Frequent Documents*, **Journal of Discrete Algorithms (JDA)**, volume 8(4), 402–417, 2010.
27. E. Lo, N. Cheng, and W. K. Hon. *Generating Databases for Query Workloads*, **Proceedings of Very Large Data Bases (PVLDB)**, volume 3(1), 848–859, 2010.
28. E. Lo, C. Binning, D. Kossmann, M. T. Ozsu, and W. K. Hon. *A Framework for Testing DBMS Features*, **VLDB Journal**, volume 19(2), 203–230, 2010.
29. J. C. Chin, Y. Dong, W. K. Hon, C. Y. T. Ma, and D. K. Y. Yau. *Detection of Intelligent Mobile Target in a Mobile Sensor Network*, **IEEE/ACM Transactions on Networking (ToN)**, volume 18(1), 41–52, 2010.
30. W. K. Hon, K. Sadakane, and W. K. Sung. *Breaking a Time-and-Space Barrier in Constructing Full-Text Indices*, **SIAM Journal on Computing (SICOMP)**, volume 38(6), 2162–2178, 2009.
31. Y. Dong, W. K. Hon, D. K. Y. Yau, and J. C. Chin. *Distance Reduction in Mobile Wireless Communication: Lower Bound Analysis and Practical Attainment*, **IEEE Transactions on Mobile Computing (TMC)**, volume 8(2), 276–287, 2009.
32. H. L. Chan, W. K. Hon, T. W. Lam, and K. Sadakane. *Compressed Indexes for Dynamic Text Collections*, **ACM Transactions on Algorithms (TALG)**, volume 3(2), 2007.
33. A. Gupta, W. K. Hon, R. Shah, and J. S. Vitter. *Compressed Data Structures: Dictionaries and Data-Aware Measures*, **Theoretical Computer Science (TCS)**, volume 387(3), 313–331, 2007.
34. W. K. Hon, T. W. Lam, K. Sadakane, W. K. Sung, and S. M. Yiu. *A Space and Time Efficient Algorithm for Constructing Compressed Suffix Arrays*. **Algorithmica**, volume 48(1), 28–36, 2007.
35. T. N. D. Huynh, W. K. Hon, T. W. Lam, and W. K. Sung. *Approximate String Matching Using Compressed Suffix Arrays*, **Theoretical Computer Science (TCS)**, volume 352(1–3), 240–249, 2006.

36. W. K. Hon, M. Y. Kao, T. W. Lam, W. K. Sung, and S. M. Yiu. *Non-shared Edges and Nearest Neighbor Interchange Revisited*, **Information Processing Letters (IPL)**, volume 91(3), 129–134, 2004.
37. W. K. Hon, M. Y. Kao, T. W. Lam, W. K. Sung, and S. M. Yiu. *Subtree Transfer Distance for Degree-D Phylogenies*, **International Journal of Foundations of Computer Science (IJFCS)**, volume 15(6), 893–909, 2004.
38. W. K. Hon and T. W. Lam. *Approximating the Nearest Neighbor Interchange Distance for Non-Uniform-Degree Evolutionary Trees*, **International Journal of Foundations of Computer Science (IJFCS)**, volume 12(4), 533–550, 2001.

### Conference Publications

1. A. Ganguly, W. K. Hon, and R. Shah. *Stabbing Colors in One Dimension*, to appear in **IEEE Data Compression Conference**, 2017.
2. W. K. Hon, T. Kloks, F. H. Liu, and H. H. Liu. *Convex Independence for Permutation Graphs*, in **International Conference on Combinatorial Optimization and Applications (COCOA)**, pages 710–717, 2016.
3. A. Ganguly, W. K. Hon, S. Thankachan, and R. Shah. *Space-Time Trade-offs for the Shortest Unique Substring Problem*, in **International Symposium on Algorithms and Computation (ISAAC)**, article 34, pages 1–13, 2016.
4. W. K. Hon, T. Kloks, F. H. Liu, H. H. Liu, and T. M. Wang. *On the Grundy Number of Cameron Graphs*, in **International Conference on Current Trends in Graph Theory and Computation (CTGTC)**, 2016.
5. A. Ganguly, W. K. Hon, and R. Shah. *A Framework for Dynamizing Parameterized Dictionary Matching*, in **Scandinavian Symposium and Workshop on Algorithm Theory (SWAT)**, article 10, pages 1–14, 2016.
6. C. H. Cheng, P. A. Chen, and W. K. Hon. *Budget-Constrained Multi-Battle Contests: A New Perspective and Analysis (oral)*, in **World Congress of the Game Theory Society (GAMES)**, 2016.
7. A. Ganguly, W. K. Hon, K. Sadakane, R. Shah, S. V. Thankachan, and Y. Yang. *Space-Efficient Dictionaries for Parameterized and Order-Preserving Pattern Matching*, in **Symposium on Combinatorial Pattern Matching (CPM)**, article 2, pages 1–12, 2016.
8. M. Cheng, S. Y. Chiu, M. Li, S. M. Yiu, L. Zhang, and W. K. Hon. *WebRTG: A Web Front-end for RNA Structure Prediction using Rectangle Tree Grammar (poster)*, in **International Conference on Research in Computational Molecular Biology (RECOMB)**, 2016.
9. C. T. Kuo and W. K. Hon. *Practical Index Framework for Efficient Time-Travel Phrase Queries on Versioned Documents*, in **IEEE Data Compression Conference (DCC)**, 2016.

10. B. Sanyal, S. Majumder, and W. K. Hon. *Efficient Generation of Top-k Procurements in Multi-Item Auction*, in **International Workshop on Algorithms and Computation (WALCOM)**, pages 181–193, 2016.
11. W. K. Hon, T. Kloks, and H. H. Liu. *On the  $P_3$ -Convexity of Some Classes of Graphs with Few  $P_4$ s and Permutation Graphs*, in **Australasian Computer Science Conference (ACSC)**, article 24, 2016.
12. W. K. Hon, S. V. Thankachan, and B. Xu. *An In-Place Framework for Exact and Approximate Shortest Unique Substring Queries*, in **International Symposium on Algorithms and Computation (ISAAC)**, pages 755–767, 2015.
13. W. K. Hon, T. Kloks, H. H. Liu, and H. L. Wang. *Rainbow Domination and Related Problems on Some Classes of Perfect Graphs*, in **IFIP International Conference on Topics in Theoretical Computer Science (TTCS)**, pages 121–134, 2015.
14. W. K. Hon, H. H. Liu, and P. W. H. Wong. *Online Nonpreemptive Scheduling for Electricity Cost in Smart Grid*, in **Workshop on Models and Algorithms for Planning and Scheduling Problems (MAPSP)**, 2015.
15. M. Li, M. Cheng, Y. Ye, W. K. Hon, H. F. Ting, T. W. Lam, C. Y. Tang, T. Wong, and S. M. Yiu. *Predicting RNA Secondary Structures: One-Grammar-Fits-All Solution*, in **International Symposium on Bioinformatics and Applications (ISBRA)**, pages 211–222, 2015.
16. W. K. Hon, T. W. Lam, R. Shah, S. V. Thankachan, H. F. Ting, and Y. Yang. *Dictionary Matching with Uneven Gaps*, in **Symposium on Combinatorial Pattern Matching (CPM)**, pages 247–260, 2015.
17. S. Majumder, B. Sanyal, P. Gupta, S. Sinha, S. Pande, and W. K. Hon. *Top-k Query Retrieval of Combinations with Sum-of-Subsets Ranking*, in **International Conference on Combinatorial Optimization and Applications (COCOA)**, pages 490–505, 2014.
18. W. K. Hon, T. Kloks, H. H. Liu, and Y. L. Wang. *Edge-Clique Covers of the Tensor Product*, in **International Conference on Algorithmic Aspects in Information and Management (AAIM)**, pages 66–74, 2014.
19. Y. G. Chen, K. Y. Lai, M. C. Lee, Y. Shi, W. K. Hon, and S. C. Chang. *Yield and Timing Constrained Spare TSV Assignment for Three-Dimensional Integrated Circuits*, in **Design, Automation, and Test in Europe (DATE)**, pages 1–4, 2014.
20. S. H. Wu, C. C. Wu, W. K. Hon, and K. G. Shin. *Rendezvous for Heterogenous Spectrum-Agile Devices*, in **IEEE International Conference on Computer Communications (INFOCOM)**, pages 2247–2255, 2014.
21. W. K. Hon, T. Kloks, C. H. Liu, H. H. Liu, S. H. Poon, and Y. L. Wang. *Results on Independent Sets in Categorical Products of Graphs, the Ultimate Categorical Independence Ratio and the Ultimate Categorical Independent Domination Ratio*, in **International Workshop on Algorithms and Computation (WALCOM)**, pages 237–248, 2014.

22. W. K. Hon, M. Patil, R. Shah, S. V. Thankachan, and J. S. Vitter. *Indexes for Document Retrieval with Relevance*, in **Space-Efficient Data Structures, Streams, and Algorithms (Ianfest-66)**, pages 351–362, 2013.
23. L. Faria, W. K. Hon, T. Kloks, H. H. Liu, T. M. Wang, and Y. L. Wang. *On Complexities of Minus Domination*, in **International Conference on Combinatorial Optimization and Applications (COCOA)**, pages 178–189, 2013.
24. M. Burcea, W. K. Hon, H. H. Liu, P. W. H. Wong, and D. K. Y. Yau. *Scheduling for Electricity Cost in Smart Grid*, in **International Conference on Combinatorial Optimization and Applications (COCOA)**, pages 306–317, 2013.
25. W. K. Hon, L. K. Lee, K. Sadakane, and K. Tsakalidis. *Compressed Persistent Index for Efficient Rank/Select Queries*, in **Algorithms and Data Structures Symposium (WADS)**, pages 402–414, 2013.
26. W. K. Hon, T. Kloks, H. H. Liu, S. H. Poon, and Y. L. Wang. *On Independence Domination*, in **International Symposium on Fundamentals of Computation Theory (FCT)**, pages 183–194, 2013.
27. T. Gagie, W. K. Hon, and T. H. Ku. *New Algorithms for Position Heaps*, in **Symposium on Combinatorial Pattern Matching (CPM)**, pages 95–106, 2013.
28. W. K. Hon, T. H. Ku, R. Shah, and S. V. Thankachan. *Space-Efficient Construction Algorithm for the Circular Suffix Tree*, in **Symposium on Combinatorial Pattern Matching (CPM)**, pages 142–152, 2013.
29. W. K. Hon, R. Shah, S. V. Thankachan, and J. S. Vitter. *Faster Compressed Top-k Document Retrieval*, in **IEEE Data Compression Conference (DCC)**, pages 341–350, 2013.
30. W. K. Hon, T. H. Ku, R. Shah, and S. V. Thankachan. *Space-Efficient Construction Algorithm for the Circular Suffix Tree (poster)*, in **IEEE Data Compression Conference (DCC)**, page 496, 2013.
31. H. Vu, F. Y. L. Chin, W. K. Hon, H. C. M. Leung, K. Sadakane, W. K. Sung, and S. M. Yiu. *Reconstructing  $k$ -Reticulated Phylogenetic Network from a Set of Gene Trees*, in **International Symposium on Bioinformatics and Applications (ISBRA)**, pages 112–124, 2013.
32. W. K. Hon, R. Shah, and S. V. Thankachan. *Towards an Optimal Space-and-Query-Time Index for Top-k Document Retrieval*, in **Symposium on Combinatorial Pattern Matching (CPM)**, pages 173–184, 2012.
33. W. K. Hon, R. Shah, S. V. Thankachan, and J. S. Vitter. *Document Listing for Queries with Excluded Pattern*, in **Symposium on Combinatorial Pattern Matching (CPM)**, pages 185–195, 2012.
34. W. K. Hon, T. H. Ku, C. H. Lu, R. Shah, and S. V. Thankachan. *Efficient Algorithm for Circular Burrows-Wheeler Transform*, in **Symposium on Combinatorial Pattern Matching**

- (CPM), pages 257–268, 2012.
35. C. H. Lin, C. H. Liu, S. C. Chang, and W. K. Hon. *Memory-Efficient Pattern Matching Architectures using Perfect Hashing on Graphic Processing Units*, in **IEEE International Conference on Computer Communications (INFOCOM)**, pages 1978–1986, 2012.
  36. W. K. Hon, C. H. Lu, S. Thankachan, and R. Shah. *Succinct Indexes for Circular Patterns*, in **International Symposium on Algorithms and Computation (ISAAC)**, pages 673–682, 2011.
  37. W. K. Hon, T. H. Ku, R. Shah, S. V. Thankachan, and J. S. Vitter. *Compressed Text Indexing with Wildcards*, in **Symposium on String Processing and Information Retrieval (SPIRE)**, pages 267–277, 2011.
  38. T. K. F. Wong, B. Y. Hsu, W. K. Hon, H. T. Yu, T. W. Lam, and S. M. Yiu. *Algorithms for Pseudoknot Classification (poster)*, in **ACM Conference on Bioinformatics, Computational Biology and Biomedicine (BCB)**, pages 484–486, 2011.
  39. M. Patil, S. V. Thankachan, R. Shah, W. K. Hon, J. S. Vitter, and S. Chandrasekaran. *Inverted Indexes for Phrases and Strings*, in **ACM SIGIR Conference on Research and Development in Information (SIGIR)**, pages 555–564, 2011.
  40. W. K. Hon, T. H. Ku, R. Shah, S. V. Thankachan, and J. S. Vitter. *Compressed Dictionary Matching with One Error*, in **IEEE Data Compression Conference (DCC)**, pages 113–122, 2011.
  41. W. K. Hon, M. Patil, R. Shah, and S. V. Thankachan. *Compressed Property Suffix Trees*, in **IEEE Data Compression Conference (DCC)**, pages 123–132, 2011.
  42. M. O. Külekci, W. K. Hon, R. Shah, J. S. Vitter, and B. Xu. *PSI-RA: A Parallel Sparse Index for Read Alignment of Genomes*, in **IEEE International Conference on Bioinformatics and Biomedicine (BIBM)**, pages 663–668, 2010.
  43. W. K. Hon, T. H. Ku, R. Shah, S. V. Thankachan, and J. S. Vitter. *Faster Compressed Dictionary Matching*, in **Symposium on String Processing and Information Retrieval (SPIRE)**, pages 191–200, 2010.
  44. W. K. Hon, R. Shah, S. V. Thankachan, and J. S. Vitter. *String Retrieval for Multi-pattern Queries*, in **Symposium on String Processing and Information Retrieval (SPIRE)**, pages 55–66, 2010.
  45. W. K. Hon, R. Shah, and J. S. Vitter. *Compression, Indexing, and Retrieval of Massive String Data*, in **Symposium on Combinatorial Pattern Matching (CPM)**, pages 260–274, 2010.
  46. F. J. Berchmans, W. K. Hon, A. C. Y. Huang, C. S. Liu, E. Lo, and D. K. Y. Yau. *Optimal Link Assignment to Enhance Service in Probabilistic Network*. in **IEEE Sensor, Mesh and Ad Hoc Communications and Networks (SECON)**, pages 235–243, 2010.

47. Y. F. Chien and W. K. Hon. *Cryptographic and Physical Zero-Knowledge Proof: From Sudoku to Nonogram*, in **International Conference on Fun with Algorithms (FUN)**, pages 102–112, 2010.
48. S. Y. Chiu, W. K. Hon, R. Shah, and J. S. Vitter. *I/O-efficient Compressed Text Indexes: From Theory to Practice*, in **IEEE Data Compression Conference (DCC)**, pages 426–434, 2010.
49. W. K. Hon, W. Wu, and T. S. Yang. *Compressed Indexes for Approximate Library Management (poster)*, in **IEEE Data Compression Conference (DCC)**, page 534, 2010.
50. F. Law, P. F. Chan, S. M. Yiu, B. Tang, P. Lai, K. P. Chow, R. Ieong, M. Kwan, W. K. Hon, and L. Hui. *Identifying Static and Dynamic Volatile Memory Data from Multiple Dumps for Live Forensics*, in **IFIP International Conference on Digital Forensics**, pages 185–194, 2010.
51. W. K. Hon, T. W. Lam, R. Shah, S. L. Tam, and J. S. Vitter. *Succinct Index for Dynamic Dictionary Matching*, in **International Conference on Algorithms and Computation (ISAAC)**, pages 1034–1043, 2009.
52. Y. S. Su, W. K. Hon, C. C. Yang, S. C. Chang, and Y. J. Chang. *Value Assignment of Adjustable Delay Buffers for Clock Skew Minimization in Multi-Voltage Mode Designs*, in **IEEE/ACM International Conference on Computer Aided Design (ICCAD)**, pages 535–538, 2009.
53. W. K. Hon, R. Shah, and J. S. Vitter. *Space-Efficient Framework for Top-k String Retrieval Problems*, in **IEEE Symposium on Foundations of Computer Science (FOCS)**, pages 713–722, 2009.
54. W. K. Hon, R. Shah, S. V. Thankachan, and J. S. Vitter. *On Entropy-Compressed Text Indexing in External Memory*, in **Symposium on String Processing and Information Retrieval (SPIRE)**, pages 75–89, 2009.
55. W. K. Hon, R. Shah, and S. B. Wu. *Efficient Index for Retrieving Top-k Most Frequent Documents*, in **Symposium on String Processing and Information Retrieval (SPIRE)**, pages 182–193, 2009.
56. C. C. Yu, W. K. Hon, and B. F. Wang. *Efficient Data Structures for Orthogonal Range Successor Problem*, in **International Conference on Computing and Combinatorics (COCOON)**, pages 96–105, 2009.
57. W. K. Hon, R. Shah, P. Varman, and J. S. Vitter. *Tight Competitive Ratios for Parallel Disk Prefetching and Caching*, in **ACM Symposium on Parallelism in Algorithms and Architectures (SPAA)**, pages 352–361, 2008.
58. Y. F. Chien, W. K. Hon, R. Shah, and J. S. Vitter. *Geometric Burrows-Wheeler Transform: Linking Range Searching and Text Indexing*, in **IEEE Data Compression Conference (DCC)**, pages 252–261, 2008.
59. W. K. Hon, T. W. Lam, R. Shah, S. L. Tam, and J. S. Vitter. *Compressed Index for Dictionary Matching*, in **IEEE Data Compression Conference (DCC)**, pages 23–32, 2008.



60. M. Eltabakh, W. K. Hon, R. Shah, W. G. Aref, and J. S. Vitter. *The SBC-Tree: An Index for Run-Length Compressed Sequences*, in **International Conference on Extending Database Technology (EDBT)**, pages 523–534, 2008.
61. J. C. Chin, Y. Dong, W. K. Hon, and D. K. Y. Yau. *On Intelligent Mobile Target Detection in a Mobile Sensor Network*, in **IEEE International Conference on Mobile Adhoc and Sensor Systems (MASS)**, pages 1–9, 2007.
62. Y. Dong, W. K. Hon, D. K. Y. Yau, and J. C. Chin. *Distance Reduction in Mobile Wireless Communication: Lower Bound Analysis and Practical Attainment*, in **ACM-IEEE International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS)**, pages 23–30, 2007.
63. Y. Dong, W. K. Hon, and D. K. Y. Yau. *On Area of Interest Coverage in Surveillance Mobile Sensor Networks (short paper)*, in **IEEE International Workshop on Quality of Service (IWQoS)**, pages 87–90, 2007.
64. W. K. Hon, T. W. Lam, R. Shah, S. L. Tam, and J. S. Vitter. *Cache-Oblivious Index for Approximate String Matching*, in **Symposium on Combinatorial Pattern Matching (CPM)**, pages 40–51, 2007.
65. C. Y. Chan, H. I. Yu, W. K. Hon, and B. F. Wang. *A Fast Query Algorithm for the Text Fingerprinting Problem*, in **European Symposium on Algorithms (ESA)**, pages 123–135, 2007.
66. A. Gupta, W. K. Hon, R. Shah, and J. S. Vitter. *A Framework for Dynamizing Succinct Data Structures*, in **International Colloquium on Automata, Languages, and Programming (ICALP)**, pages 521–532, 2007.
67. A. Gupta, W. K. Hon, R. Shah, and J. S. Vitter. *Compressed Dictionaries: Space Measures, Data Sets, and Experiments*, in **International Workshop on Experimental Algorithms (WEA)**, pages 158–169, 2006.
68. A. Gupta, W. K. Hon, R. Shah, and J. S. Vitter. *Compressed Data Structures: Dictionaries and Data-Aware Measures*, in **IEEE Data Compression Conference (DCC)**, pages 213–222, 2006.
69. H. L. Chan, W. K. Hon, T. W. Lam, and K. Sadakane. *Dynamic Dictionary Matching and Compressed Suffix Trees*, in **ACM-SIAM Symposium on Discrete Algorithms (SODA)**, pages 13–22, 2005.
70. T. N. D. Huynh, W. K. Hon, T. W. Lam, and W. K. Sung. *Approximate String Matching using Compressed Suffix Arrays*, in **Symposium on Combinatorial Pattern Matching (CPM)**, pages 434–444, 2004.
71. H. L. Chan, W. K. Hon, and T. W. Lam. *Compressed Index for Dynamic Collection of Texts*, in **Symposium on Combinatorial Pattern Matching (CPM)**, pages 445–456, 2004.
72. W. K. Hon, T. W. Lam, K. Sadakane, W. K. Sung, and S. M. Yiu. *Compressed Index for Dynamic Text*, in **IEEE Data Compression Conference (DCC)**, pages 102–111, 2004.

73. W. K. Hon, T. W. Lam, W. K. Sung, W. L. Tse, C. K. Wong, and S. M. Yiu. *Practical Aspects of Compressed Suffix Arrays and FM-index in Searching DNA Sequences*, in **Workshop on Algorithm Engineering and Experimentations (ALENEX)**, pages 31–38, 2004.
74. W. K. Hon, K. Sadakane, and W. K. Sung. *Breaking a Time-and-Space Barrier in Constructing Full-Text Indices*, in **IEEE Symposium on Foundations of Computer Science (FOCS)**, pages 251–260, 2003.
75. W. K. Hon, T. W. Lam, K. Sadakane, and W. K. Sung. *Constructing Compressed Suffix Arrays with Large Alphabets*, in **International Conference on Algorithms and Computation (ISAAC)**, pages 240–249, 2003.
76. W. K. Hon, K. Sadakane, and W. K. Sung. *Succinct Data Structures for Searchable Partial Sums*, in **International Conference on Algorithms and Computation (ISAAC)**, pages 505–516, 2003.
77. W. Fu, W. K. Hon, and W. K. Sung. *On All-Substrings Alignment Problems*, in **International Conference on Computing and Combinatorics (COCOON)**, pages 80–89, 2003.
78. W. K. Hon and K. Sadakane. *Space-Economical Algorithms for Finding Maximal Unique Matches*, in **Symposium on Combinatorial Pattern Matching (CPM)**, pages 144–152, 2002.
79. W. K. Hon, M. Y. Kao, and T. W. Lam. *Improved Phylogeny Comparison: Non-shared Edges, Nearest Neighbor Interchanges, and Subtree Transfer*, in **International Conference on Algorithms and Computation (ISAAC)**, pages 527–538, 2000.
80. W. K. Hon and T. W. Lam. *Approximating the Nearest Neighbor Interchange Distance for Evolutionary Trees with Non-Uniform Degrees*, in **International Conference on Computing and Combinatorics (COCOON)**, pages 61–70, 1999.

## Book Chapters

1. W. K. Hon. *Non-Shared Edges*. **Encyclopedia of Algorithms (Editor: M. Y. Kao)**, 2008; 2015.
2. W. K. Hon. *Chapters Annotation (in Chinese)*. **Discrete Mathematics and Its Applications (7th Edition) by Kenneth H. Rosen**, McGraw-Hill Education, 2014.

## Research Funding

1. 2016/07–2017/06.  
Co-Investigator. *Fast Data Analysis and Interaction-Intensive Delivery for Big Data*.  
**Ministry of Science and Technology Grant 105-2634-E-007-001**, Taiwan, NTD\$4,500,000.
2. 2016/08–2019/07.  
Co-Investigator. *Analysis of Dynamic Data Linked by Social Networks*.  
**Ministry of Science and Technology Grant 105-2221-E-007-036-MY3**, Taiwan, NTD\$5,786,000.

3. 2016/08–2019/07.  
Principle Investigator. *Working With Partitioned Graphs — Theory and Practice*.  
**Ministry of Science and Technology Grant 105-2221-E-007-040-MY3**, Taiwan, NTD\$2,549,000.
4. 2016/03–2016/08.  
Fellowship for International Research Visit (6 months).  
Location: Louisiana State University, Baton Rouge, US. (Host: Prof. Rahul Shah)  
**Ministry of Science and Technology Grant 105-2918-I-007 -006**, Taiwan, NTD\$451,360.
5. 2013/08–2016/07.  
Principle Investigator. *Designing Efficient Indexes for Searching Versioned Documents*.  
**National Science Council Grant 102-2221-E-007-068-MY3**, Taiwan, NTD\$2,499,000.
6. 2013/06–2014/05 and 2014/06–2015/05.  
Co-Investigator. *Development of Metagenomic Analytic Platform for Construction of Periodontal Pathogens-Associated Database and Its Clinical Application*.  
**National Science Council Grant 102-2622-E-126-002-CC1**, Taiwan,  
NTD\$2,280,000 (Phase 1) and NTD\$2,000,000 (Phase 2).
7. 2010/08–2013/07.  
Principle Investigator. *Compressed and Efficient Indexes for Prioritized Document Retrievals*.  
**National Science Council Grant 99-2221-E-007-123**, Taiwan, NTD\$2,166,000.
8. 2007/08–2010/07.  
Principle Investigator. *Novel Techniques for Text Indexing and Their Applications*.  
**National Science Council Grant 96-2221-E-007-082**, Taiwan, NTD\$1,575,000.

### Theses Supervision

PhD Thesis (at National Tsing Hua University, Taiwan)

**2014.** Tsung-Han [Wisely] Ku.

*Space-Efficient Indexes for Some New Biological Applications*.

**2015.** Sheng-Yuan [Frank] Chiu.

*Robust and Truthful Power Management: A Back to Front Framework for Energy Auditing and Scheduling*.

Master Thesis (at National Tsing Hua University, Taiwan)

**2008.** Yu-Feng [Mark] Chien.

*Physical Zero-Knowledge Proof for Nonogram Puzzles*.

**2009.** Fu-Home [Homer] Liu.

*An Efficient Algorithm for Answering Top-k Typical Range Representatives Query*.

**2009.** Hsiang-Hsuan [Alison] Liu.

*A Survey on the Set Union-Find Problem*.

- 2009.** Bo-Ru [Winson] Wu.  
*Compressed Index for Approximate String Matching: From Theory to Practice.*
- 2009.** Shih-Bin Wu.  
*Efficient Index for Retrieving Top-k Most Frequent Documents and Its Construction.*
- 2009.** Ting-Shuo [Kaven] Yang.  
*Dynamic Compressed Index for Approximate String Matching.*
- 2012.** Bay-Yuan Hsu.  
*A Structural Prediction Algorithm for RNA Triple Helix Structure.*
- 2013.** Chia-Yu [Jason] Liang.  
*Scheduling for Electricity Demands by Truthful Mechanism in Smart Grid.*
- 2014.** Chun-Ting [Bruce] Kuo.  
*Space-Efficient Index Framework for Time-Travel Phrase Query on Versioned Documents.*
- 2014.** Po-Chun [Bass] Wu.  
*An Evaluation of Maximum Flow Algorithms in Distributed-Parallel Environment.*
- 2015.** Chu-Han [Edward] Cheng.  
*Online Budget-Constrained Strategy for Majority of Winnings in Finite Games.*
- 2016.** Yu-Chia [Michael] Cheng.  
*WebRTG: A Web Front-End for RNA Structure Prediction using Rectangle Tree Grammar.*
- 2016.** Yilin [Kerker] Yang.  
*Variants of Dictionary Matching.*
- 2016.** Yun-Ping [Nathan] Tien.  
*Optimal File Dissemination Scheduling Under a General Binary Tree of Trust Relationship.*
- 2017.** Cheng Ruo.  
*Connected  $\mathbb{P}_3$ -Game on Grids and Tori.*

## Research Interests

String Matching  $\diamond$  Indexing  $\diamond$  Compression  $\diamond$  External-Memory  $\diamond$  Combinatorial Optimization

## Teaching Areas

Discrete Math  $\diamond$  Algorithms  $\diamond$  Data Structures  $\diamond$  Theory of Computing  $\diamond$  Randomized Algorithm

## Professional Activities

Program committee member of various international conferences, including  
MSN'10, CPM'11, ICPADS'11 (Vice Co-chair), FAW-AAIM'13, ISAAC'13, ICPADS'14,  
GIW/InCoB'15, ICPADS'15, BIBE'16, GIW'16, SPIRE'16

Reviewer of various international journals and conferences, including

- Journals in Algorithms: CSURV ◊ JACM ◊ SICOMP ◊ TALG  
 Algorithmica ◊ JCSS ◊ JDA ◊ JEA ◊ TCS  
 DMGT ◊ IEICE ◊ IPL ◊ IP&M ◊ IJFCS ◊ JISE ◊  
 MSCS ◊ PeerJ ◊ ZUSC
- Journals in Other Areas: VLDBJ ◊ TON ◊ TKDE ◊ TC  
 Bioinformatics ◊ TCBB ◊ JBCB ◊ CBAC
- Conferences: SODA'07, SODA'08, COCOON'08, DCC'10, SODA'12, DCC'13  
 ICALP'13, DCC'15, DCC'16, ICALP'16, ISAAC'16, ALENEX'17, DCC'17

Services to the community, including

- IOI 2014 (HSC Member), MoEX (Questions Drafter, Examiner),  
 Local Programming Contests [TOI, PTC, ITSA] (Problems Poser)

## Additional Information

### ACADEMIC VISITS

1. Advanced Digital Sciences Center, Singapore, Host: David K. Y. Yau, 2011 (Dec).
2. Louisiana State University, USA, Host: Rahul Shah, 2009 (Jan–Feb, Jul–Aug); 2010 (Jun–Jul); 2016 (Mar–Sep).
3. National Institute of Informatics, Japan, Host: Kunihiko Sadakane, 2010 (May); 2011 (Dec).
4. Polytechnic University, Hong Kong, Host: Eric Lo, 2008 (Jul–Aug); 2011 (Jul–Aug); 2014 (Jul–Aug); 2015 (Jul–Aug).
5. University of Hong Kong, Hong Kong, Host: Tak-Wah Lam and Siu-Ming Yiu, 2010 (Jan, Aug 18); 2011 (Jan–Feb, Jul–Aug); 2014 (Jul–Aug).
6. University of Tokyo, Japan, Host: Kunihiko Sadakane, 2014 (May); 2015 (Jun); 2017 (May).

### INVITED TALKS

7. International PhD Student Workshop on SOC (IPS'08), Kenting, Taiwan, 2008 (Aug).
8. Chinese University of Hong Kong, Hong Kong, Host: Andrew Yao, 2010 (Jan 11).
9. National Cheng Kung University, Taiwan, Host: Sun-Yuan Hsieh, 2010 (Jun 11); 2011 (Jun 17); 2016 (Dec 05).
10. National Chi Nan University, Taiwan, Host: Yuh-Ming Huang, 2010 (Nov 19); 2011 (Jun 03).
11. National Dong Hwa University, Taiwan, Host: Sheng-Lung Peng, 2012 (Jan 6).

12. National Chiao Tung University, Taiwan, Host: Shi-Chun Tsai, 2013 (Mar 6).
13. National Chiao Tung University, Taiwan, Host: Po-An Chen, 2015 (Sep 24).
14. National Taiwan University of Science and Technology, Taiwan, Host: Ming-Bo Lin, 2015 (Dec 14).
15. Hong Kong University of Science and Technology, Hong Kong, Host: Ke Yi, 2015 (Dec 15).
16. National Cheng Kung University, Taiwan, Host: Sun-Yuan Hsieh, 2016 (Dec 05)
17. National Chiao Tung University, Taiwan, Host: Association of Algorithm and Computation Theory, 2017 (Jan 14)

#### CONFERENCE PRESENTATIONS

18. International Symposium on Algorithms and Computation (ISAAC'13), Hong Kong.
19. International Symposium on Algorithms and Computation (ISAAC'15), Nagoya, Japan.
20. International Conference on Combinatorial Optimization and Applications (COCOA'16), Hong Kong.

#### References (in alphabetical order)

1. Prof. Tak-Wah Lam (PhD advisor)  
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2. Prof. Kunihiro Sadakane (Collaborator)  
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Professor, Department of Mathematical Informatics,  
The University of Tokyo, Japan.
3. Dr. Rahul Shah (Collaborator)  
Email: rahul@csc.lsu.edu  
Associate Professor, Department of Computer Science,  
Louisiana State University, Louisiana, USA.
4. Prof. Jeffrey Scott Vitter (Post-doc supervisor)  
Email: chancellor@olemiss.edu  
Professor, Department of Computer Science, and Chancellor,  
The University of Mississippi, Mississippi, USA.